MODINE

Heating, cooling and air conditioning equipment for residential, commercial and industrial application

MODINE MANUFACTURING CO.
RACINE • • • WISCONSIN

BULLETIN SA-39

MODINE

HEATING, COOLING AND AIR CONDITIONING EQUIPMENT

For Residential, Commercial and Industrial Application

Behind Modine Equipment lies twenty-two years of experience in the design, manufacture and sale of heat transfer equipment. Millions of pieces of Modine equipment produced in this twenty-two-year-period and distributed to all parts of the globe, provide a tremendous "proving ground," so necessary in the development of superior products.

It is with this background of research, experience, development and facilities that the Modine products are offered to the architect, contractor, and engineer.

Arthur B. Modine, founder of the company, is an engineer as well as a manufacturer. His work in the development of automotive radiators and industrial heating equipment serves as a background for the larger line of Modine products now known nationally. His belief in the necessity of well-equipped experimental laboratories has played a large part in the design of Modine products.

It was Modine who pioneered the suspended-type unit heater for industrial and commercial heating . . . now accepted, used and endorsed by the most prominent architects, heating engineers and industrialists in the United States.

The use of copper and copper alloys plays an important part in the durability of every Modine product. Because Modine purchases millions of pounds of copper and its alloys each year, unusual precautions are taken in securing only that copper which fully meets Modine specifications. These coppers and copper alloys are carefully tested, both chemically and mechanically, in the Modine laboratories. This assurance that only the highest quality of metal, free from impurities, is being used in Modine products, is significant to every heating engineer. It means that the possibility of hidden flaws is reduced to a minimum.

All ratings of Modine heat transfer equipment are accurate and in accordance with the Standard Code of the A.S.H. & V.E., assuring the architect and engineer of full rated Btu. capacities.

Nation-wide Sales Organization—There is a Modine Representative in your locality (see list on back cover of this catalog). Every Modine Representative is a competent heating engineer and will be happy to assist you. Naturally, there is no obligation whatever.

INDEX

MODINE MANUFACTURING COMPANY
GENERAL OFFICES • RACINE, WISCONSIN

Sales offices throughout the United States and in several foreign countries—see list on back cover.

MODINE COPPER RADIATION

For over a decade, Modine Copper Radiation (Convectors) has been specified as standard heating equipment for America's finest buildings and residences.

As a pioneer manufacturer of copper convectors, the Modine Manufacturing Company contributed much to the wide-spread preference for this type of heating equipment . . . and to the consequent comfortable living conditions which convectors provide.

Recognizing the varied requirements and applications of convector heating, Modine now makes available *the widest selection of copper radiation* . . . three distinct and separate lines . . . each designed for a specific purpose.

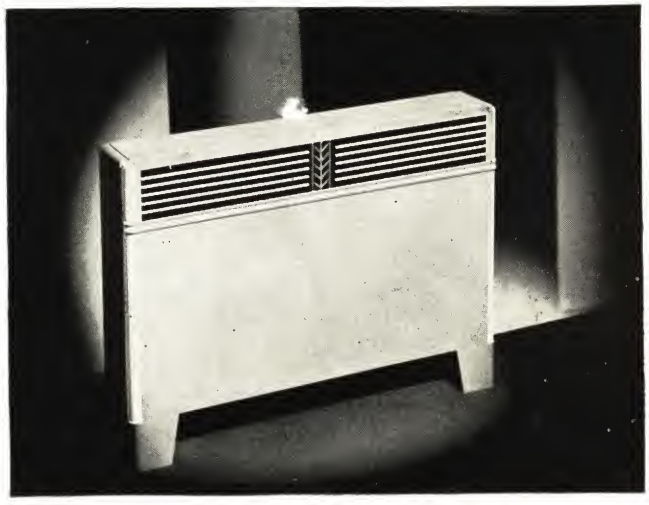
The design and construction characteristics as well as the suggested applications of the *Deluxe, Standard* and *Institutional* convectors are outlined on this and following pages.

MODINE *De Luxe* CONVECTORS

Modine *Deluxe* Convectors are designed for use where truly distinctive beauty of enclosure is essential. Strikingly styled enclosures, graceful of line and pleasingly proportioned . . . and the wide selection of cast grille patterns which Modine *patented flexible design* makes possible, give Modine *Deluxe* Radiation a beauty of appearance that blends harmoniously with the decorative schemes of the finest interiors.

Grilles on the Modine *Deluxe* Convectors are die-castings, nearly a quarter of an inch thick at their shallowest point and are cast in four designs of *individual segments.* By inserting the separate interchangeable segments in the grille frame the number of grille patterns which can be created through the combination of the four elementary designs shown below is limited only by the versatility of the architect.

Grilles can be obtained prime-painted or in plated finishes such as 24k Gold, Polished Chrome, Colonial Brass, Statuary Bronze or Antique Silver.



Floor Cabinet with Modern Medallion Grille

THERE ARE 4 TYPES OF MODINE DE LUXE CONVECTORS

The Modine Concealed Type—The Modine Concealed Type Convector is perhaps the most popular of the four types of Modine Convectors. It is truly the ultimate in concealed radiation. The only visible parts are the grilles—everything else about the assembly being installed in the wall, *behind the plaster.*

The Modine Recessed Type—This convector is installed *in the wall* and is designed to serve the same general applications as the Concealed Type. However, it has several distinct and important features.

The Recessed Type does not require plastering across its face . . . and it occupies less space in the wall than any of the other types.

The Modine Floor Cabinet Type—In the modernization of already existing buildings, as well as in those being newly constructed, the Modine Floor Cabinet Type Convector has a wide range of application.

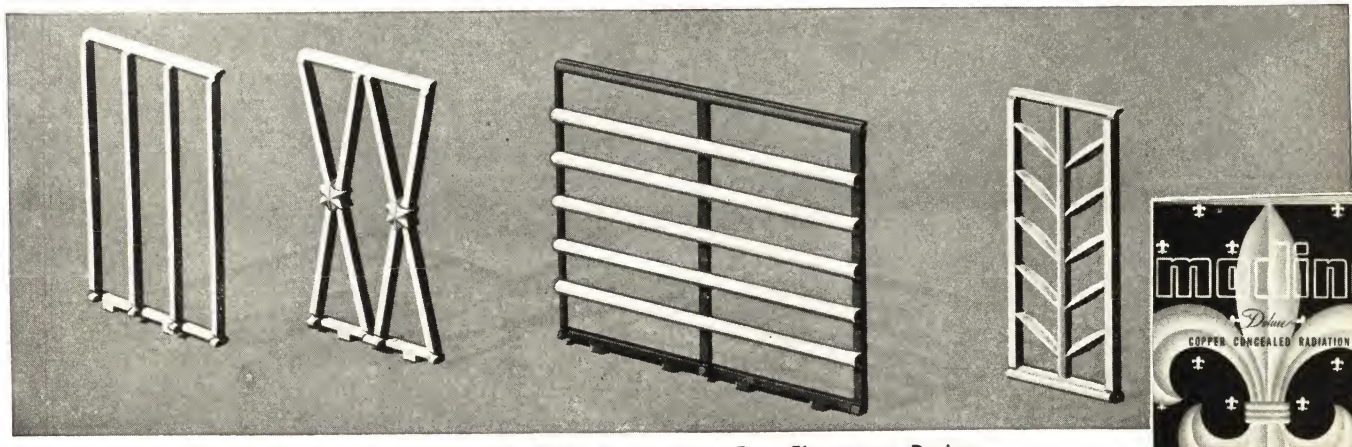
Designed primarily for open installation in a room . . . because it is generally placed *against the wall,* rather than in it . . . the Floor Cabinet Type ideally fits modernization plans in which it is not desired to disturb the wall construction already in existence.

The Modine Wall Cabinet Type—The Modine Wall Cabinet Convector has found its widest range of application in institutional and commercial fields. Designed for installation *on the wall,* it is an ideal type for offices, stores, schools, hospitals and other public or semi-public institutions of all sorts, where recessing is not practicable and easy cleaning of floors is imperative.

Range of Sizes and Capacities

SIZES:
Five Depths—3⅝ in., 5½ in., 7⅜ in., 9¼ in. and 11⅛ in.
Twelve Lengths—From 15 in. to 60 in.
Thirteen Heights—From 18 in. to 70 in.

CAPACITIES:
From 8.7 to 139.7 sq. ft. of radiation.



Interchangeable Grille Segments in Four Elementary Designs

For Further Details WRITE FOR CATALOG No. S238 ▶

MODINE *Standard* CONVECTORS

The new Modine *Standard* convector is intended for application where the economies that are effected by simplification and standardization of design can be employed to advantage. As a result, the most popular applications for this new convector are in stores, offices, hotels and other commercial buildings and in apartments and moderate cost, single family dwellings.

Because of the economies resulting from its simplified design, the benefits of steam and hot water heating with Modine copper convectors can be enjoyed at a new low cost.

The new Modine *Standard* convectors are as handsome in appearance as they are sturdy in construction. The design of the enclosure gains from its rounded corners a genuinely smart yet rugged appearance which harmonizes perfectly with modern interior decoration schemes.

Removable Front Feature—One of the outstanding features of the Modine *Standard* convector is its removable front. No tools are required. By simply disengaging two catches with the hands, the entire enclosure front may be easily removed for accessibility for cleaning, or for servicing the copper heating unit and its piping. When installed, the front fits snugly to the enclosure, assuring a rigid, sturdy assembly. The desirability of this feature has been definitely evidenced by its wide-spread demand over a period of years, particularly for commercial buildings.

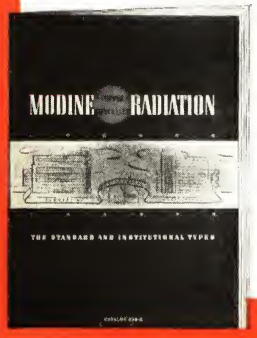
TYPES OF ENCLOSURES ON MODINE STANDARD CONVECTORS

The drawings at right show the differences in design of the available types of Modine *Standard* Convectors.

Flush Front—This type adheres to the conventional design of Recessed enclosure. The front is perfectly flat and is installed flush with the finished wall, occupying no floor space whatsoever. When painted to match the wall or properly grained to match the woodwork, this convector affords a high degree of concealment.

The depth of heating unit which this enclosure will accommodate is determined by the distance from the finished plaster line to the rear of the enclosure.

Panel Front—To accommodate a heating unit of a depth greater than that between finished plaster line and the rear of the enclosure, Modine designed the Panel Front Recessed convector. With less depth of wall recess, a convector unit of greater capacity can be employed. This is possible because the front projects about 1¾ in. from the wall. Therefore, although the heating unit may be 1¾ in. deeper than the rear half of the enclosure, this difference is accounted for by the slight projection of the front from the wall. This frequently results in lower installation costs where only one convector need be installed in a room where two would otherwise be necessary.



Projection Front—An entirely new principle of recessed convector design is embodied in the Modine Projection Front convector. This convector was developed for installation *in walls of 4 in. stud-depth,* where it is necessary to provide a maximum amount of radiation in a limited wall area.

Floor Cabinet Type Showing Operation of Removable Front

In design principle, the Projection Front type differs from the Panel Front in the following manner: (1) the stack or rear half of enclosure remains 4 in. in depth; (2) the front, however, is available in a 3½ in. or 5½ in. depth. Thus it is possible to install a heating unit of 7⅜ in. or 9¼ in. depth in a wall of only 4 in. stud-depth—with the enclosure front projecting 3½ in. or 5½ in. into the room.

Where this projection into the room is not objectionable, one Modine convector of this type may be used where perhaps two or more conventional convectors would otherwise be necessary.

Floor Cabinet—The Modine *Standard* Floor Cabinet convector is ideally adapted to installation in existing buildings as well as in new construction. Primarily designed for open installation in a room—against a wall rather than recessed in it, this type is often specified for modernization work and where it is not desirable to disturb existing wall construction.

Wall Cabinet—The Modine *Standard* Wall Cabinet convector is most commonly specified for institutional and commercial application. Ideal for school rooms, corridors, offices and stores where recessing is not always practical, this convector is installed on the wall and allows easy cleaning of the floor beneath it.

Like the Floor Cabinet, it is ideally adapted to modernization work where it is not desirable to make changes in existing building construction.

Range of Sizes and Capacities

SIZES:

Five Depths—3⅝ in., 5½ in., 7⅜ in., 9¼ in., and 11⅛ in.

Twelve Lengths—From 15 in. to 60 in.

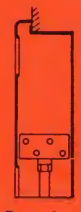
Eleven Heights—From 18 in. to 44 in.

CAPACITIES:

From 8.7 to 125.1 sq. ft. of radiation.

(below)
TYPES OF MODINE ENCLOSURES


Flush Front

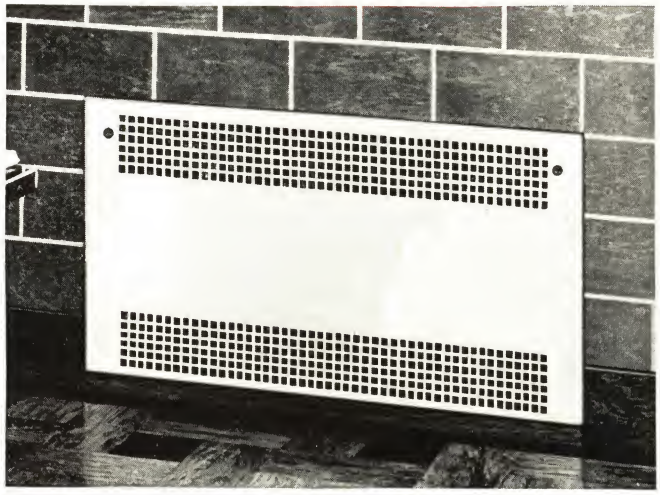

Panel Front


Projection Front


Floor Cabinet


Wall Cabinet

MODINE *Institutional* CONVECTORS



Flush Front Recessed Type

Modine Now Offers a Line of Convectors SPECIFICALLY Designed to Meet the Requirements Of Institutional Heating

For this specialized application, architects and engineers specify equipment which is seldom necessary for commercial and residential heating. Hence, it is not practical or economical to include these institutional "specials" in convectors which are designed primarily for residential or commercial application.

Heretofore these "specials" have been treated as extras and accordingly carried a considerably higher price. In the *Institutional* line, Modine makes these "specials" standard equipment . . . stock items available at only a slight additional cost.

This line includes the Flush Front and Panel Front Recessed types and the Wall Cabinet type. Dimensions are interchangeable with these types in the *Standard* line.

FEATURES OF THE INSTITUTIONAL CONVECTORS

Optional features of the *Institutional* Convectors include such items as the Lock Type Removable Front and Lock Type Damper for use in institutions where tampering with convectors is likely.

For the additional strength and rigidity required for institutional work, these enclosures are made of heavier gauged metals than used in the *Standard* type. Square lattice grilles are standard equipment in this line.

Flush Front and Panel Type Recessed Convectors—These convectors are made with stacks or rear enclosure halves of 18 ga. steel, and fronts of 14 ga. steel (panel front type), or 12 ga. or 14 ga. steel (flush front). These fronts are available with ¾ in. square lattice upper and lower face grilles or with square lattice upper grille and framed lower opening.

Wall Cabinet Convectors—Stacks on rear enclosure halves are made of 18 ga. steel. Fronts are of 14 ga. and tops (where top outlet grille is used) are of 12 ga. steel. Outlet grille may be furnished on face or top of enclosure.

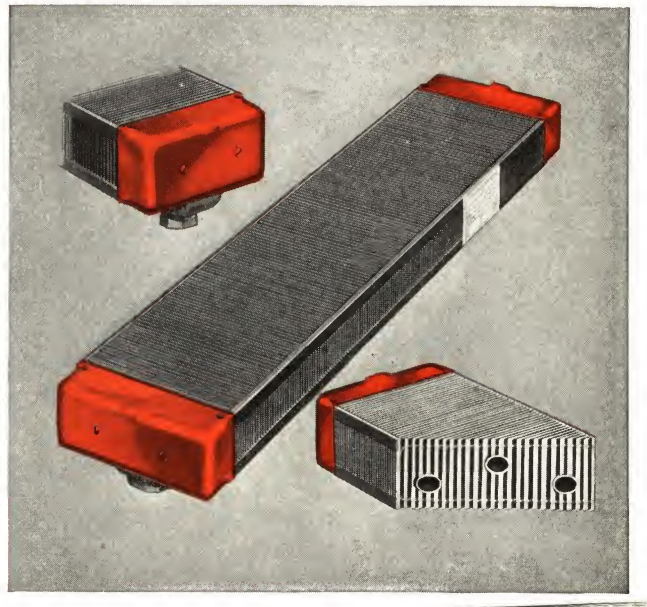
Range of Sizes and Capacities

Same as *Standard* Convectors.

THE NEW "RED-CAP" COPPER HEATING UNIT—of the Modine Convector

The most important part of any convector is its heating unit. The definite performance advantages of convector heating . . . which are largely responsible for its wide spread acceptance . . . depend to a great extent on the design and construction of the heating unit.

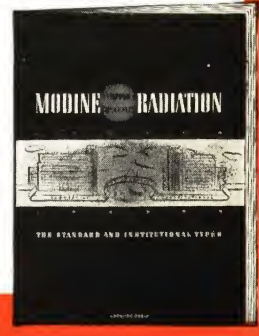
The Modine heating unit is entirely new. Improvements in design and construction have made it more compact than ever before. Although its capacity has been increased, its size and weight have been reduced. Strides have also been taken to streamline this unit, making it much trimmer in appearance. Red metal caps over the end castings make it easy to identify the new Modine "Red-Cap" Heating Unit.



Fins Metallically Bonded to Tubes—Typical of the superior construction of the "Red-Cap" *is the metallic bond* joining fins to tubes. *This positive, permanent junction makes certain that the heat transfer ability of the unit will not deteriorate during its long life of service.*

The Modine "Red-Cap" heating unit may be used on any type of steam system; vapor, vacuum, or one-pipe, and on forced flow or gravity hot water systems. The Red-Cap is available in five depths and twelve lengths. All are the same height—2½ in.

The "Red-Cap" Heating Unit is tested at 100 lbs. hydrostatic pressure and is guaranteed for pressures up to 50 lbs.



For Further Details WRITE FOR CATALOG No. S238-A ▶

MODINE AIR

APARTMENT HOUSE TYPE

An All-Purpose Unit . . . Flexible . . . Accessible . . . Easily Installed

The Modine Air Conditioner (Apartment House Type) is a compact, self-contained unit designed to perform every individual function of true *year-'round* air conditioning. *In winter* it heats, humidifies, cleans and circulates the air. *In summer* it cools, dehumidifies, cleans and circulates the air.

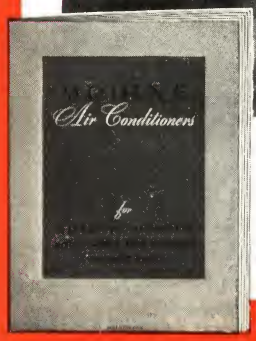
With it Modine provides an automatic, simultaneous control of each separate air conditioning function. A touch of the finger on the Modine all-weather control dial brings the desired climate into any apartment, home, or store . . . with unvarying temperature and the exact relative humidity and air motion which assure maximum health and comfort.

While the Modine Air Conditioner is fundamentally designed as a year-'round air conditioning unit, it is possible to select a unit which gives (a) winter air conditioning only; (b) summer air conditioning only . . . according to needs, climate, and budget. The Modine Air Conditioner for winter air conditioning becomes a year-'round unit by simply adding a cooling coil and, in some cases, supplementary control equipment.

The Modine Air Conditioner uses either steam or hot water as the heating medium. It attaches to any steam or hot water boiler or central steam supply and is adaptable to any kind of automatic firing—oil, gas, or coal stoker; or to hand firing.

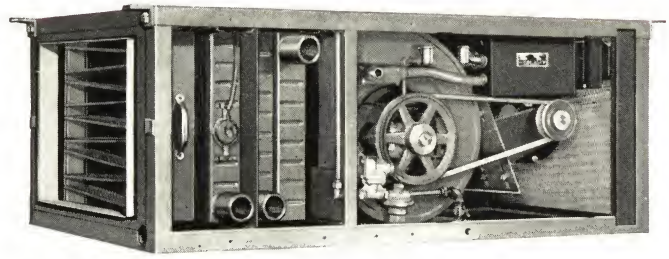
FOR APARTMENTS, HOTEL SUITES, RESIDENCES, ETC.

This unit is called the Apartment House Type only because its compactness, easy accessibility, remarkable flexibility of installation, unusually quiet operation and prepossessing appearance ideally suit it for the air conditioning of individual apartments, hotel suites and the like. But it is these same important features that make it equally well adapted to residential and light commercial air conditioning.



A Model 74 installed in a basement recreation room . . . in conjunction with a hot water boiler. Ducts supply conditioned air to living quarters.

Model 74



Model 74 with Access Doors Removed

So carefully designed is this Modine unit that it may be installed so that only one side need be exposed. The rest of the cabinet (the entire top, bottom, ends, and opposite side) may be installed flush with the adjoining surfaces—wall, ceiling, or supporting shelf. The ends, moreover, need not be accessible after original installation.

Through access doors on the one exposed side, motor and blower, control panel, water valves, heating and cooling coils, and humidifier tray are all quickly and easily accessible. Piping and conduit connections are likewise made from this same side and through one end.

Thus filter replacement, control adjustment, removal of humidifier tray, or addition of cooling coil may be made without in any way disturbing the unit itself.

This distinctively Modine design feature . . . together with the fact that the motor and motor drive are completely enclosed within the cabinet, instead of protruding . . . allows this Modine Conditioner to be easily installed on a shelf above a false ceiling in a closet or hallway.

RANGE OF CAPACITIES (These capacities are based on 0″ External Resistance)

	HEATING 2 lb. Steam 65° Ent. Air		HEATING 180° Ent. Water 65° Ent. Air		COOLING 50° Ent. Water 85° D.B. Ent. Air		COOLING 40° Freon 85° D.B. Ent. Air	
MODEL	BTU	CFM	BTU	CFM	BTU	CFM	BTU	CFM
S-74-DE W-74	60,500	845	60,500	925	17,500	805	23,500	845
S-155-DE W-155	130,000	1560	129,000	1720	39,500	1720	46,200	1560

NOTE: The above are a few typical models to illustrate the range of capacities.

◀ For Further Details WRITE FOR BULLETIN No. S638-B

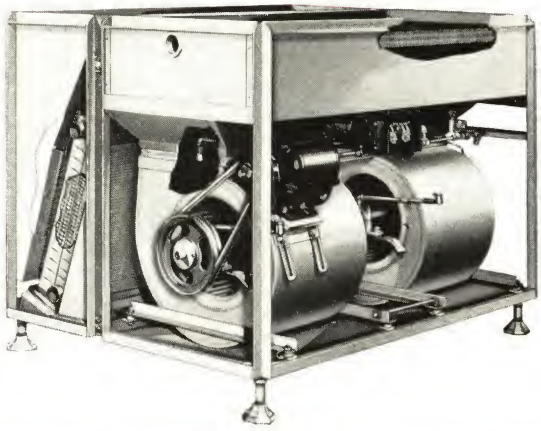
CONDITIONERS

Model 258

Below:

Model 391

with access doors removed and portions cut away.



LARGE CENTRAL TYPE

Modine Automatic Air Conditioning with SYNCHRONOUS CONTROL

Like the unit described on the preceding page, the Modine Large Central Type Air Conditioner performs every individual function of true year-'round air conditioning . . . automatically . . . with synchronous control. In the winter it heats, humidifies, cleans and circulates the air. In the summer it cools, dehumidifies, cleans and circulates the air.

Although the Large Central Type has been designed as a year-'round unit, it is possible to select a model which will provide (a) winter air conditioning only; (b) summer air conditioning only. By simply adding a cooling coil and controls to a winter air conditioner, it becomes a year-'round unit.

A High Capacity Unit—The high heating, cooling and air delivery capacities of this line of conditioners adapts them to the air conditioning of large residences, stores and offices. Ordinarily installed in a basement in conjunction with a steam or hot water boiler, the conditioned air is distributed to the rooms by means of ducts.

Heating and Cooling Media—For winter air conditioning, either steam or hot water serves as the heating medium. In the summer, well water, tap water where sufficiently cold, water pre-cooled by mechanical refrigeration, or Freon may be used for cooling.

CONSTRUCTION FEATURES OF THE LARGE CENTRAL TYPE

The Frame and Cabinet—All component parts of the Modine Conditioner are built into a rigid, electrically welded, heavy angle-iron framework and entirely enclosed in a steel housing. The interior surfaces of the steel trim sheets that form the enclosure cabinet are lined with a layer of sound-absorbing felt which acts as an insulator to eliminate vibration and noise. The exterior surfaces are finished in an attractive green enamel.

The Blower—The quiet, efficient blower which circulates the air is of the double-inlet, centrifugal type, with large diameter wheel, and scroll housing, lined with sound-absorbent felt. The entire assembly is cushioned with live resilient rubber and suspended at four points. This type of suspension prevents transmission of vibration or sound to either the frame or ducts.

The Humidifier—Humidification is accomplished by means of a spray nozzle capable of providing high atomization, which is located in the humidifying chamber, between the blower and the coils. Water from the normal water supply is passed through a strainer and an electric water valve to the spray nozzle and is forced into the chamber as a mist.

Heating and Cooling Coils—All heating and cooling coils are of Modine design and manufacture whether they be for steam or hot water heating or for cold water or direct expansion cooling. All are of the copper fin and tube type, designed to transfer a great amount of heat quickly, with a minimum of air resistance. Tubes, fins, and tanks as well as inlet and outlet castings are of copper or copper alloy. This eliminates probabilities of deterioration by electrolysis.

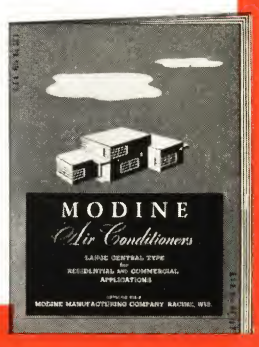
The Air Filters—The air filters are large area pads of glass wool, impregnated with a viscous coating, and are placed transversely and diagonally to the air flow on the intake side of the conditioner cabinet. The filters are of the removable type and can be easily removed for periodic "bumping-off" of any adhering dirt or lint.

Models—The large Central Type Conditioners are available in two sizes, the Model 258 and the Model 391. These models are available with various combinations of steam or hot water heating coils and cold water or Freon cooling coils. The table below shows the capacities of several combinations. Further information on the complete line can be had from the catalog.

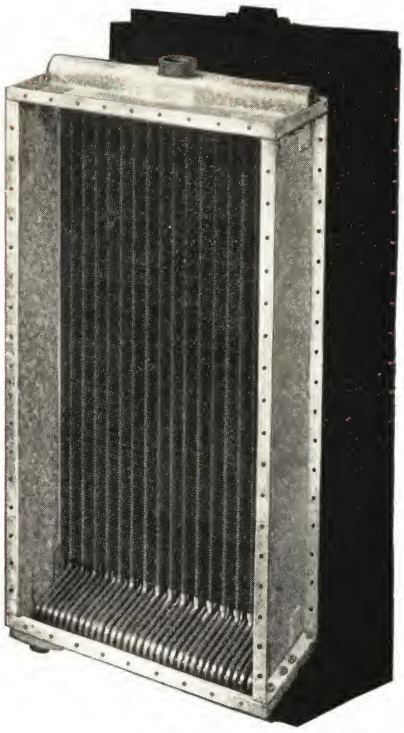
RANGE OF CAPACITIES (These capacities are based on 0" External Resistance)

MODEL	HEATING 2 lb. Steam 65° Ent. Air		HEATING 180° Ent. Water 65° Ent. Air		COOLING 50° Ent. Water 85° D.B. Ent. Air		COOLING 40° Freon 85° D.B. Ent. Air	
	BTU	CFM	BTU	CFM	BTU	CFM	BTU	CFM
S-258-DE	240,000	2320					60,000	2450
W-258			220,500	2650	61,250	2650		
S-391-DE	369,000	3580					104,000	4220
W-391			307,000	3900	87,300	3900		

NOTE: The above are a few typical models chosen to illustrate the range of capacities.



MODINE



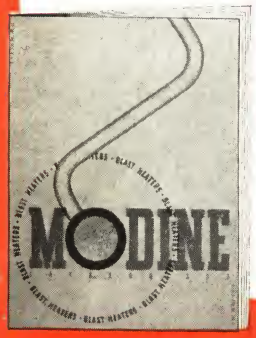
MODINE BLAST HEATERS

Modine Blast Heaters have been chosen by leading architects and engineers for many of the nation's finest buildings . . . and for more than a decade they have been used by makers of various drying and processing machines and air conditioning equipment.

Among the salient features incorporated in the design of this heat transfer surface are greater structural strength without sacrificing light weight . . . highly effective heat transfer capacity and the ability to handle larger volumes of air at low static pressure loss . . . ease and economy of installation . . . accurate, reliable ratings. These features make the Modine Blast Heater capable of meeting the most exacting engineering requirements. Whether used for heating, ventilating, air conditioning, or special process application, they will be found to register a definite contribution to the system.

Sizes and Types of Blast Heaters—Modine Blast Heaters are made in three casing-widths: 21¼ in., 29 in. and 37¾ in.; and thirteen lengths ranging from 2 ft. 8½ in. to 10 ft. 8½ in. All sizes are available in the following seven types: 1 row of tubes, 3 fins per in.; 1 room, 4 fins; 1 row, 6 fins; 1 row, 7 fins; 1 row, 8 fins; 2 rows, 6 fins; 2 rows, 8 fins. These types are known as 36, 44, 57, 64, 72, 93 and 109 respectively. Type numbers designate final temperature based on entering air at 0° F., velocity at 500 F.P.M. and a steam pressure of 5 pounds.

Pressure Guarantee—All Modine Blast Heaters are guaranteed to withstand hydrostatic pressure up to 500 lbs. per sq. in. or operating steam pressure or temperature corresponding to those of 150 lbs. per sq. in. gauge saturated steam.



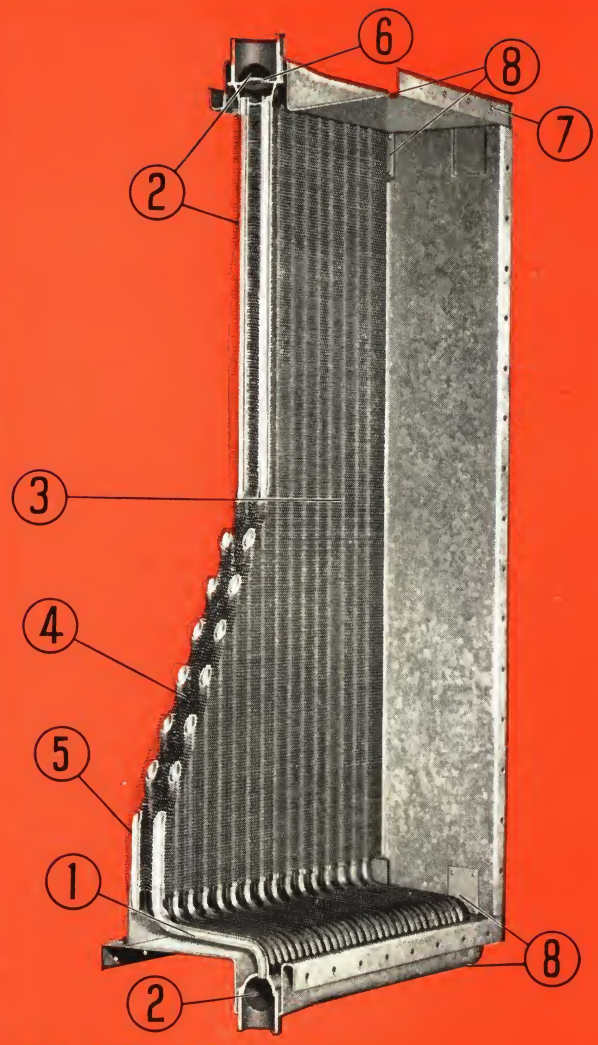
MODINE COOLING COILS
(Cold Water Type)

The latest information on Modine (Cold Water Type) Cooling Coils was not compiled when this bulletin went to press. As soon as this material is assembled, it will be made available to all architects, engineers and contractors.

BLAST HEATERS

THE 8 DESIGN FEATURES

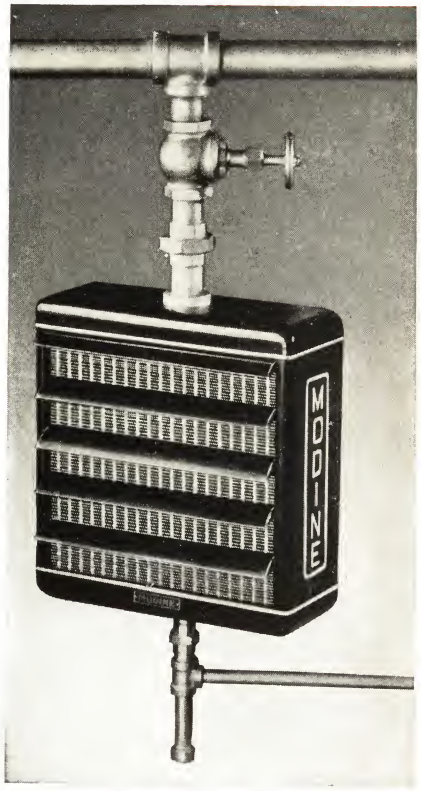
1. **Modine Feature Eliminates Expansion Strain**—The expansion-bend, an exclusive Modine feature . . . allows each tube to expand and contract as its temperature requires without affecting the tube adjacent to it . . . eliminates expansion strain as well as possibility of leakage resulting from this strain.
2. **Headers and Tubes Are Cylindrical**—All steam carrying passages are cylindrical, making for greatest possible structural strength.
3. **Condenser Is Pure Copper or Copper Alloy**—From inlet to outlet, condenser is of copper or copper-alloy construction . . . eliminating all electrolysis probabilities.
4. **Fins Scientifically Formed**—Copper fins are die-formed (covered by Modine patents) to increase heat transfer efficiency.
5. **Fins Bonded Metallically to Tubes**—Metallic bonding insures a permanent junction that remains intact even under high temperatures and years of operation . . . prevents reduction of original heat transfer capacity.
6. **Steam Distributed Evenly to All Tubes**—Steam distributing plate brazed into header rations steam evenly to all tubes . . . eliminates need for orificing.
7. **Casing Designed for Easy Installation**—Sturdy steel casing contributes strength to blast heater and provides for easy and economical installation in any normal operating position.
8. **Piping Strain Absorbed by Casing**—All external piping strain is absorbed by casing instead of being transmitted to copper condenser.



For Further Details WRITE FOR CATALOG No. S338

MODINE UNIT HEATERS

Modine pioneered the suspended type of unit heater so universally used for all types of industrial and commercial heating . . . and for drying and processing applications. Modine Unit Heaters will be found in factories, stores and offices in almost every city in the country. This year as in previous years, more Modines are sold than any other unit heater in the world. This enviable record has been achieved through Modine's superior construction and performance and through such Modine features as are described below.



NOTE THESE DISTINCTIVE CONSTRUCTION FEATURES

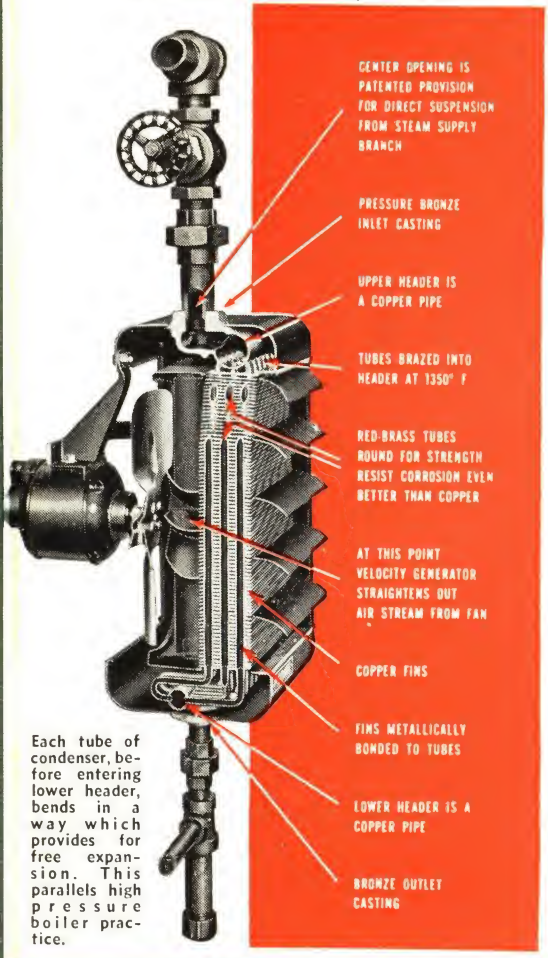
1—Direct Suspension—This allows the Modine Unit Heater to be hung directly from the supply line without supporting straps or rods, permitting full 360° rotatability. This safe, easy means of support reduces installation costs and greatly simplifies redirection of the unit. *This is a Modine patented feature.*

2—Expansion Bend—Provides for individual tube expansion and prevents tube or tank distortion. After each tube passes vertically through the condenser, it bends and extends horizontally into the bottom tank. This horizontal section acts as a "flexion" or expansion bend. Each tube can expand or contract entirely independently of similar action taking place in adjacent tubes. *This is a Modine patented feature.*

3—Velocity Generators—Provide greater heat throw, more even and economical distribution of heat without increasing power requirements. *This is a Modine patented feature.*

4—Non-Ferrous Condenser—Condenser is pure copper or copper alloy from point where steam enters to where it leaves as condensate. This construction reduces to a minimum, probabilities of electrolysis and corrosion in the condenser.

5—Metallic Bonding—Fins are metallically bonded to tubes to prevent gradual deterioration of heat transfer during the unit's long life of service.



Each tube of condenser, before entering lower header, bends in a way which provides for free expansion. This parallels high pressure boiler practice.

THERE ARE TWO TYPES OF MODINE UNIT HEATERS

1. Steam Type Available in 17 Models—This unit has a condenser designed with cylindrical copper headers, cylindrical red-brass tubes and the Modine expansion bend which provides differential expansion of the tubes. The ratio of primary or tube surface to secondary or fin surface is 1 to 8. All Modine Steam Type Unit Heaters are guaranteed for operation on 150 lbs. steam pressure, with the exception of Model 76 which is guaranteed for 50 lbs. Higher pressure guarantees on models other than No. 76 will be made on special request to the factory.

2. Hot Water Type Available in 9 Models—Because of the decreased temperature difference between entering air and the heating medium (when hot water is used) Modine Hot Water Type Unit Heaters are designed with a ratio of tube to fin surface of 1 to 3 (steam type is 1 to 8). Oval instead of round tubes are used by reason of the high water turbulence within such tubes compared with round tubes.

The heavy gauge copper headers are capable of absorbing very easily the slight strains set up by tube expansion and contraction caused by comparatively low temperature differences in a hot water system. All Modine Hot Water Type Unit Heaters are guaranteed for operation on 150 lbs. per sq. in. hydrostatic pressure with the exception of Model 73-W which is guaranteed for 50 lbs.

Wide Range of Sizes Available—Modine Unit Heaters are offered in a wide range of steam and hot water sizes from the Model 76 (76 sq. ft. of radiation) to Model 2015 (2015 sq. ft. of radiation). Intermediate sizes facilitate the economical application of Modine units to heating problems of every description.

CONDENSED CAPACITIES AND DIMENSIONS
Modine Steam Unit Heaters

Model No.	Overall Height	Width	Depth Less Motor	E.D.R.	C.F.M.	Motor R.P.M.
76	10½	9¾	5¾	76	187	1550
126	16	13	8	126	456	1590
152	18	15	8	152	540	1590
181	18	15	8	181	770	1140
204	18	15	8	204	735	1140
238	18	15	8	238	731	1140
275	19½	13	9	275	1052	1140
352	22½	18	9	352	1425	1140
440	22½	18	9	440	1320	1140
542	23	22	9	542	1710	1125
620	26½	22	9	620	2140	1120
710	26½	22	9	710	2230	1120
903	27⅞	26	10½	903	3000	1125
1163	30⅜	26	10½	1163	4050	1110
1300	34⅜	26⅜	8	1300	5010	1125
1545	30⅛	52½	11	1545	5400	1125
2015	30⅝	56½	11	2015	6540	1110

All above models are available with variable speed motors. Capacities for hot water units available on request.

For Further Details WRITE FOR CATALOG No. S138 ▶

MODINE UNIT

BLOWER TYPE . . . . . .

The New, Efficient Modine Unit Cooler

The new Modine Blower Type Unit Cooler is designed primarily for the effective and economical comfort cooling of stores, restaurants, beauty shops, offices and similar commercial establishments. In addition to cooling, it filters and cleans the air, absorbs excessive moisture and creates a positive air circulation . . . thus providing practically every individual function of summer air conditioning . . . yet costing only slightly more than an ordinary unit cooler which only cools the air. The exceptionally deep cold water cooling coils employed in this unit cooler makes it unusually effective, when used with deep well or tap water.

CONSTRUCTION FEATURES OF THE MODINE BLOWER TYPE COOLER

Permits Use of Ductwork—Because the fan on the New Modine Unit Cooler is of the blower type, it has greater capacity for overcoming external resistance than the propeller type fan used in the conventional coolers. Thus the use of ducts is entirely practical and results in less reduction of cooling capacity.

May Be Entirely Concealed—The design of the new Modine cooler allows it to be completely concealed after installation. The unit may be installed in a rear room, above a false ceiling or shelving . . . or in any other convenient location. As all access to the unit and its component parts is from one side of the cabinet, it may be installed with top, opposite side (opposite to access doors) and bottom flush with adjoining surfaces. Where it is unnecessary to conceal the unit, nor desirable to install duct work, the cooler may be suspended from the ceiling and installed without supply and return ducts.

Quiet Operation—Every precaution has been taken to provide the quietest operation possible. The unit has a slow speed blower lined with sound absorbent felt. This acoustically treated material is also used to line the entire interior of the cabinet. The motor is enclosed within the cabinet rather than mounted on the outside and is mounted on rubber cushions.

Attractive Appearance—The Modine Unit Cooler cabinet . . . containing all component parts, is finished in a soft shade of green enamel which contrasts perfectly with the aluminum-finished trim strips. When installed in open view (suspended from the ceiling), this unit will adapt itself to modern commercial decorative schemes.

Cooling Coils—Modine Unit Coolers are available for operation with both cold water and direct-expansion (Freon) types of cooling coils, a separate design of coil, being used for the different mediums.

The cold water cooling coils are designed for use with tap water, well water, non-corrosive brine or water precooled by ice or mechanical refrigeration. The direct expansion cooling coils are intended for operation with Freon only.

Range of Capacities—Modine Unit Coolers (Blower Type) are available in two models: Model 35 and Model 68. The model numbers designate the heat absorption capacity in thousands of B.t.u. per hour with 40° F. average water temperature and 85° F. entering air temperature. Thus a Model 68 under these conditions has a heat absorption capacity of 68,000 B.t.u. per hour.

When these Blower Coolers are equipped with a direct expansion type coil for Freon, they are known as Model 35-DE and Model 68-DE.

RANGE OF CAPACITIES (These capacities are based on 0″ External Resistance)

	COLD WATER 50° Ent. Water 85° D.B. Ent. Air		FREON 40° Refrigerant 85° D.B. Ent. Air	
MODEL	BTU	CFM	BTU	CFM
35-CW*	23,300	925		
35-DE			21,000	905
68-CW†	44,000	1725		
68-DE			47,000	1720

*Capacity based on 40 lbs. water flow/min.
†Capacity based on 60 lbs. water flow/min.

In this restaurant, the Unit Cooler is installed above a false ceiling. Ducts and unit are entirely concealed.

Suspended from the ceiling of this grocery store the Modine Unit Cooler is installed without supply and return ducts.

For Further Details WRITE FOR BULLETIN No. S438-A

COOLERS

PROPELLER TYPE

The Propeller Type Is Used for Economical Cooling with Cold Water

The new Modine Unit Cooler offers a simple yet effective method of cooling by the circulation of cold water. Suspended in a room, like the Modine Unit Heater, it is equipped with a motor and fan which draws the room air through the unit, absorbing heat and moisture and returning cooled and freshened air into the room.

Installation of the Modine Unit Cooler is quickly and easily accomplished . . . without the use of duct work . . . without disturbing existing construction or interior decorations . . . without costly alterations . . . and without the necessity of closing the premises or halting regular operation.

ADAPTABLE TO ALL-YEAR ROUND UTILITY

Adaptable to All-Year-Round Utility—Because Modine Unit Coolers, Cold Water Type, approximate the construction of the well-known Modine Hot Water Unit Heaters, they can be adapted to all-year-round utility. New developments in design which eliminate the use of a moisture eliminator make it unnecessary to go to the trouble of removing this device before using the unit for heating.

During the heating season, hot water or low pressure steam can be circulated through the unit with equally satisfactory and efficient heating results. In new buildings, the same equipment can thus be employed all-year-round for both complete heating and cooling. In existing buildings with heating plants already installed, one or more Modine Units can be used as required to supplement the heating system.

Cooling in summer, heating in winter . . . Modine Unit Coolers represent a sound investment in year-round, life-long service.

Possesses Unlimited Applications—Because it can be economically and easily installed, the Modine Cold Water Type Unit Cooler is well suited to an unusually wide range of application. Stores, restaurants, mortuaries, barber shops, beauty parlors, taverns, offices, recreation rooms . . . these and many other locations where the comfort of patrons or employees is desirable.

Cooling Media—Well water, tap water where sufficiently cold, water pre-cooled by ice or mechanical refrigeration . . . or a non-corrosive brine may be used as the cooling medium.

Available Sizes—Modine Unit Coolers, Cold Water Type, are made in four sizes . . . Models 14, 23, 39, 61 which individually or in combination will fill practically every cooling requirement. Models 14 and 23 are most applicable where quiet operation is essential. Models 39 and 61 are recommended for larger areas and for process applications or may be used where quietness is a factor if provided with two-speed or three-speed motors and operated generally on less than highest speed.

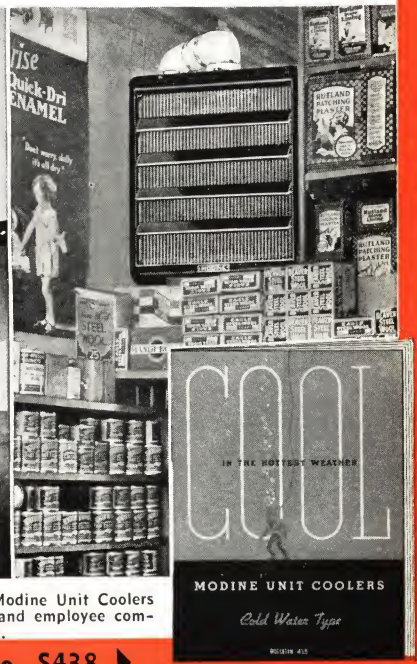
RANGE OF CAPACITIES (High Speed)

	COLD WATER 50° Entering Water 85° D.B. Ent. Air	
MODEL	BTU	CFM
14	9,960	701
23	15,390	1,282
39	25,800	2,310
61	45,210	4,425

Note Capacity of Model 14 based on minimum water flow of 26 lbs./min.; Model 23—31 lbs./min.; Model 39—41 lbs./min.; and Model 61—47 lbs./min.

Cooling and dehumidifying is an important factor in shops where perishable goods are stored and sold.

Refreshingly cool air makes this a "popular spot" on the hottest summer days and nights.



Hardware stores use Modine Unit Coolers to increase customer and employee comfort.

For Further Details WRITE FOR BULLETIN No. S438 ▶

Albany, N. Y., Ernest E. Malpass,
Industrial Bldg., 1039 Broadway, Albany 45610
Atlanta, Ga., J. W. Hinchey,
152 Nassau St., N. W., Walnut 0429
Atlantic City, N. J., Sidney B. Strouse,
500-529 Guarantee Trust Bldg., Atl. City 53900
Baltimore, Md., Wm. I. Collier & Co.,
522 Park Ave., Vernon 5236
Birmingham, Ala., Haydn Myer,
2224 Comer Bldg., 3-4645
Boston, Mass., G. A. Barrows Co.,
10 High St., Liberty 0465
Bozeman, Mont., E. W. Bunnell, 409 S. 8th St., 1317
Buffalo, N. Y., J. A. Sullivan,
112 Groveland Ave., Univ. 6590
Caldwell, Ohio, I. E. Danforth, 827 West St., 67-J
Charlotte, N. C., Earl G. Embree,
711 Clement Ave., P. O. Box 1867, 2-3550
Chicago, Ill., D. S. Paden,
737 N. Michigan Ave., Superior 0510 & 0518
Cincinnati, Ohio, Harry A. Pillen,
622 Broadway, Rm. 209 Indus. Bldg., Cherry 2440
Cleveland, Ohio, G. A. Rock,
615 Newman Stern Bldg., 1740 E. 12th St.,
Cherry 1970
Columbus, Ohio, A. F. McGovern,
83 So. High St., Rm. 318, Main 1744
Dallas, Texas, Paul R. Winston Co.,
Construction Bldg., 7-4949
Dayton, Ohio, The Graves & Marshall Co.,
716-726 E. Monument Ave., Fulton 8931
Denver, Colo., Harry H. Herman,
1226-1228 California St., Tabor 4505
Detroit, Mich., George W. Akers Co.,
16525 Woodward Ave., Townsend 8-5640,
8-5641 & 8-5642
Elizabeth, N. J., Heating Equipment Sales Co.,
259 N. Broad St., 2-1425
El Paso, Texas, George W. Herlin,
401 N. Santa Fe St., P. O. Box 512, Main 7 and 8
Erie, Pa., P. A. Nash, 507 Cherry St., 24-325
Fond du Lac, Wis., A. N. Goff,
94 Eighth St., 6973
Grand Rapids, Mich., Jay K. Richmond,
Dygert Bldg., 1 Ionia Ave., S., 90241
Hartford, Conn., J. M. Augur, P. O. Box 744, 32-3465
Huntington, W. Va., Jack B. Ayres,
1127 9th St., 23893
Indianapolis, Ind., C. A. Will,
5402 Broadway, Broadway 0121
Jacksonville, Fla., H. L. McMurry,
P. O. Box 1911, 2861 College St., 7-8691
Kansas City, Mo., Disney-Leffel Co., Inc.,
3323 Main, Valentine 0488
Knoxville, Tenn., Plumbing & Heating Sales Co.,
408 W. Clinch Ave., P. O. Box 1363, 3-8212
Los Angeles, Calif., T. H. Creears Co.,
1824 S. Hope St., Prospect 1985
Louisville, Ky., J. R. Hancock,
314 Armory Place, Rm. 305, Jackson 8952
Memphis, Tenn., C. J. Gaskell,
1011 Falls Bldg., 8-3477
Milwaukee, Wis., W. F. Boden,
420 E. Wells St., Marquette 7626
Minneapolis, Minn., Heating Equipment Co.,
830 Plymouth Bldg., Atlantic 2235
Moline, Ill., A. H. Belouske, 2708 14th Ave., 3861
New Orleans, La., R. K. Rothrock,
5316 Dryades St., Upt. 3466
New York, N. Y., R. D. Tyler,
1734 Architects Bldg., 101 Park Ave.,
Ashland 4-4482
Oklahoma City, Okla., Loeffler-Greene Supply Co.,
1604 N. W. Fifth St., 3-5315
Omaha, Nebr., Air Conditioning Utilities, Inc.,
1810 Harney St., Webster 2900
Philadelphia, Pa., Wm. S. Kidd,
Rm. 106 Wilford Bldg., 33rd & Arch Sts.,
Evergreen 1708
Phoenix, Ariz., John W. Ladlow, Box 1784, 3-3825
Pittsburgh, Pa., P. F. Moser,
207 Fulton Bldg., Atlantic 3114
Portland, Ore., Howard B. Nielsen,
409 Couch Bldg., Atwater 2684
Racine, Wis., H. P. Connolly,
% Modine Mfg. Co., Jackson 500
Raleigh, N. C., B. C. Allen, 211 McDowell St., 2017
Richmond, Va., Shultz & James, Inc.,
7 N. Sixth St., 2-3965
Rockford, Ill., R. E. Burden,
232 Grand Ave., Parkside 404
St. Louis, Mo., R. J. Smith,
7707 Lile Avenue, Sterling 1313
Salt Lake City, Utah, A. A. Maycock Co.,
234 Seventh Ave., P. O. Box, 3, Wasatch 4871
San Antonio, Texas, E. G. Langhammer,
P. O. Box 367, 436 N. Main Ave., Fannin 1802
San Francisco, Calif., P. J. O'Meara,
50 Hawthorne St., Sutter 6743
Savannah, Ga., Bergen & Peck,
205 Mendel Bldg., 5528
Scranton, Pa., Leonard A. Howley,
210 Comerford Bldg., Linden at Wyoming Ave.,
4-5377
Seattle, Wash., R. H. Case,
417 Central Bldg., Elliot 6651
Shreveport, La., Ace Combustion Eng. Co.,
P. O. Box 784, 222½ Milam, 2-2245
Syracuse, N. Y., H. V. Boggs,
205 Harrison St., Rm. 307, 2-7664
Toledo, Ohio, Ralph Shawaker,
132 Summit St., Adams 7825
Wichita, Kan., J. M. O'Connor,
208 N. Waco St., 2-3484
Wilkes-Barre, Pa., F. A. Dockeray,
Rm. 718 Wilkes-Barre Deposit & Savings Bank
Bldg., 3-7536
York, Pa., Paul E. Sowers Co.,
139 W. King St., 2597

MODINE MANUFACTURING COMPANY

GENERAL OFFICES: RACINE, WISCONSIN

FACTORIES: RACINE, WIS., AND LAPORTE, IND.

FOREIGN OFFICES

Belgium, Antwerp, Jacques Ketels,
% Bureau Technique F. Hermans
Canada, Toronto, Ont., A. H. Hills,
Sarco Canada Limited
England, London, Utilities (London) Ltd.
Holland, Hilversum, N. V. Boometal-Hilversum
Mexico, D. F. Enrique Huber
Norway, Oslo, Rolf Berg
New Zealand, Christchurch, Taylors, Ltd.
South Africa, Johannesburg, Tullis (S.A.) Ltd.

SEE LIST OF DOMESTIC SALES OFFICES SHOWN AT LEFT . . . .


CONVECTORS


BLAST HEATERS


CONVECTORS


UNIT HEATERS


AIR CONDITIONERS

COOLING EQUIPMENT

TYPICAL MODINE INSTALLATIONS ARE SHOWN ABOVE

North Dakota Capitol, Bismarck, N. D.
Holabird & Root, Architects

The residence of W. E. Crowell,
Mt. Washington (Cincinnati), Ohio
Luigi J. Moroni, Architect

A handsome Chicago suburban home
(Winnetka, Ill.)
Ralph Huzagh, Architect
Dougherty Bros., Heating Contractors

Municipal Auditorium, Kansas City, Mo.
Alonzo H. Gentry, Voskamp & Neville, Architects
Hoit, Price and Barnes, Associate Architects
W. L. Cassell, Mechanical Engineer

Modern Indiana Industrial Plant constructed by the Austin Co., Cleveland, Ohio

W. T. Grant Company, Department Store, Wichita, Kan.
Overend and Boucher, Architects
Moore & Robertson, Contractors